

EXPERIMENT STATION RESEARCH ENGINEER

SUBJECT AND AUTHOR INDEX

MAY, 1950-MARCH, 1951

A

- 2-Acetyl thiophene, tertiary alcohol derivatives, Ja '51, 15
- A-C network calculator, S '50, 18
- Adsorption, see Dye adsorption
- Aeronautical engineering,
 - aerodynamic equilibrium equation of the lifting rotor, S '50, 22
 - airfoil studies, by hydraulic analogy, S '50, 16
 - in compressible flow, S '50, 21
 - airplane transfer functions, determination and classification, S '50, 22
 - digests of graduate theses, S '50, 21
 - research, S '50, 16
- Aerosols, settling rate of particles, S '50, 12
- Allis-Chalmers solvent extraction unit, Ja '51, 19, 22, 23
- Aluminum alloy sheet,
 - fatigue and corrosion fatigue study, S '50, 21
 - flexure fatigue, S '50, 21
- Anderson solvent extraction unit, see also Exsolex, Ja '51, 19, 21
- Aptitude tests, S '50, 19
- Army reserve research and development program, My '50, 9
- Assembling machine, automatic, S '50, 16
- Athey, Robert J.,
 - the absorption spectrum of nitryl chloride, Ja '51, 15
- Aviation clock dial, My '50, 13
- Azeotrope in the bromine-carbon tetrachloride system, Ja '51, 16

B

- Bartholomay, Henry William,
 - solubilities in the system gallium-mercury, Ja '51, 15
- Bartlett's Ferry Dam, see Dam
- Battery, fundamental studies, S '50, 11
- Beaver, William Morrissey,
 - tertiary alcohol derivatives of 2-acetyl thiophene, Ja '51, 15
- Bergman microhardness tester, My '50, 4
- Beryllium, analytical investigation, S '50, 12
- Biochemistry,
 - microorganism survival at low temperatures, S '50, 14
 - research, S '50, 14
 - water and sewage analysis, S '50, 14
- Bizzell, Oscar M.,
 - planning a small radioisotope program, N '50, 9
- Blaw-Knox solvent extraction unit, Ja '51, 20, 22
- Bodiford, Robert Graham,
 - an investigation of the effect of surface finish on the flexure fatigue strength of 75S-T6 aluminum alloy sheet, S '50, 21
- Bollinger, Everett, Jr.,
 - capital issues and their cyclical implications, My '50, 11
- Bollman solvent extraction unit, Ja '51, 19
- Bonotto solvent extraction unit, Ja '51, 19
- Brawley, Bolling Gay,
 - an investigation of capillary spreading power of emulsions, N '50, 17
- Brick masonry, reinforced, S '50, 16
- Bromine-carbon tetrachloride system, azeotrope, Ja '51, 16
- Burrows, W. H.,
 - graphical and mechanical methods of computation, My '50, 5

C

- Calculator, A-C network, S '50, 18
- Capillary spreading power of emulsions, N '50, 17
- Capital issues, cyclical implications, My '50, 11
- Carbon monoxide from gas heaters, S '50, 12
- Carbon tetrachloride,
 - bromine system, azeotrope, Ja '51, 16
 - toluene rectification, N '50, 17
- Carboxylic acid, 2-thiophene, preparation of esters, Ja '51, 16
- Carter, William L.,
 - characteristics of a packed distillation column: correlation of H.T.U. with operating variables for rectification of carbon tetrachloride-toluene mixtures, N '50, 17
- Catchpole, Eric John,
 - application of the hydraulic analogy to study the performance of two airfoils in compressible flow, S '50, 21
- Cattle-weighing scale, S '50, 15
- Cement, effect of additives on the physical properties, N '50, 18
- Cerium, relations of temperature, crystal structure and superconductivity, My '50, 12
- Chemical engineering, digests of graduate theses, N '50, 17
- Chemical Sciences Division, S '50, 11
 - new head, My '50, 24
- Chemistry,
 - digests of graduate theses, Ja '51, 15
 - research, S '50, 11
- Cheng, Fa-wu,
 - the extraction of oil and protein from cottonseed by a water-grinding and centrifuging process, Ja '51, 16
- Chromium determination in water and sewage, S '50, 14
- Circuits, high-frequency, crystal-controlled oscillators, S '50, 18
- Civil engineering research, S '50, 16
- Cleaning farmers' stock peanuts, Ja '51, 3
- Cliett, Charles Buren,
 - a study of fatigue and corrosion fatigue for 24ST aluminum alloy sheet, S '50, 21
- Clock dial, aviation, My '50, 13
- Coatings,
 - facilities for study, N '50, 20
 - flooring materials, S '50, 14
 - paints, S '50, 13
 - plastics, rubber and resins, N '50, 4
 - research, S '50, 13; N '50, 3
 - varnishes and resins, S '50, 14
- Cofield, E. P., Jr.,
 - solvent extraction—a new method in an old industry, Ja '51, 5
- Colburn equation, applicability to carbon tetrachloride-toluene solutions, N '50, 17
- Compton, Philip Robinson,
 - an analytical procedure for determination of lift and drag forces for bodies of revolution, S '50, 22
- Computation, graphical and mechanical methods, My '50, 5; S '50, 18
- Copper spark method of spectrographic analysis, Ja '51, 16
- Corrosion fatigue study of aluminum alloy sheet, S '50, 21
- Cottonseed,
 - oil and protein extraction by water-grinding and centrifuging, Ja '51, 16
 - solvent extraction, Ja '51, 5, 6, 21, 23

GEORGIA INSTITUTE OF TECHNOLOGY

- Cottrell, Bert M., Jr.,
the preparation of certain esters of 2-thio-
phenyl carboxylic acid, Ja '51, 16
- Cox, Fred W., Jr.,
the State Engineering Experiment Station,
1949-1950, S '50, 7
- Crosland, Dorothy M.,
the Georgia Tech Library as a tool for
science and industry, N '50, 5
- Crown solvent extraction unit, Ja '51, 20, 23
- Crystallization, zone of, Mr '51, 13
- Crystals,
high-frequency oscillator circuits, S '50, 18
impedance-frequency characteristics,
My '50, 12

D

- Dam,
Bartlett's Ferry, description, Ja '51, 7
engineering investigation, Ja '51, 7
hydraulic model tests, Ja '51, 10
modifications, Ja '51, 7
chute spillway, S '50, 16
erosion reduction, S '50, 16
- Detrex solvent extraction unit, Ja '51, 20, 23
- Dielectric and reflecting properties of sea water at
microwave frequencies, S '50, 18
- Distillation,
applicability of Colburn equation to carbon
tetrachloride-toluene, N '50, 17
packed column characteristics, N '50, 17
rate of molecular, N '50, 18
- Dixon, Frederick,
the impedance-frequency characteristics of
quartz crystals, My '50, 12
- Drag and lift forces on bodies of revolution, predic-
tion, S '50, 22
- Dwyer, Joseph S.,
an analysis of motion and time study train-
ing as given by colleges and industry, My
'50, 11
- Dye adsorption applied to fine particles, S '50, 12

E

- Education and research, N '50, 2
- Electromagnetic waves,
dielectric and reflecting properties of sea wa-
ter at microwave frequencies, S '50, 18
propagation studies, S '50, 17
- Electronics research, S '50, 17
- Electron Microscope, Mr '51, 3
calibration, Mr '51, 11
description and operation, Mr '51, 4
magnification, Mr '51, 4
replica techniques, Mr '51, 11
shadow-casting techniques, Mr '51, 11
specimen limitations, Mr '51, 10
studies, S '50, 18
- Elliott, Thomas A.,
cleaning farmers' stock peanuts, Ja '51, 3
- Emulsions, capillary spreading power, N '50, 17
- Engineering Experiment Station, see State Engineering
Experiment Station
- Engine, gasoline, development, S '50, 15
- Erosion, corrective measures applied to dam apron,
S '50, 16
- Experiment Station, see State Engineering Experiment
Station
- Exposure,
station, N '50, 20
testing of paints, N '50, 3; Mr '51, 7
accelerated tests, Mr '51, 23
Georgia Tech program, Mr '51, 16
interpretation of results, Mr '51,
18
techniques, Mr '51, 8

- Exsolex solvent extraction unit, see also Anderson,
Ja '51, 19, 21, 22, 23
- Extraction, see also Solvent extraction,
mechanical, Ja '51, 6
solvent, Ja '51, 5
water-grinding and centrifuging, S '50, 12;
Ja '51, 16

F

- Fatigue,
and corrosion fatigue study of aluminum
alloy sheet, S '50, 21
flexure tests of aluminum alloy sheet, S '50,
21
- Fine particles, see also Micromeritics, collection of
radioactive dusts, N '50, 15
- Flexure fatigue tests of aluminum alloy sheet, S '50,
21
- Flooring materials, S '50, 14
- Floyd, Acey Lee Roy, Jr.,
effect of temperature on the crystal structure
of lanthanum, cerium, neodymium, and
praseodymium. The relation between crystal
structure and superconductivity, My '50, 12
- Fluoride determination in water and sewage, S '50, 14
- Foods,
freezing, S '50, 12; Mr '51, 5
changes in physical characteristics,
S '50, 13
research, S '50, 12
- Freezing,
of foods, Mr '51, 5
of highly organized bodies, Mr '51, 6
of microorganisms, Mr '51, 12
vitrification, Mr '51, 13
zone of crystallization, Mr '51, 13
- French solvent extraction unit, Ja '51, 20, 22, 23

G

- Gallium-mercury solubilities, Ja '51, 15
- Gas heaters, production of carbon monoxide, S '50, 12
- Gasoline engine development, S '50, 15
- Georgia Institute of Technology, see also State Engi-
neering Experiment Station
- Army reserve research, Mr '50, 9
- coatings research, N '50, 4
- facilities, N '50, 20
- electron microscope, Mr '51, 3
- frozen foods, Mr '51, 5
- hydraulic weighing scale, N '50, 7
- library, N '50, 5
- metallurgical research, Mr '50, 3
- paint exposure-test program, Mr '51, 16
- research on peanut cleaning, Ja '51, 3
- Georgia, research for, S '50, 9
- Government-financed research, Ja '51, 2
- Graphical and mechanical methods of computation,
My '50, 5; S '50, 18

H

- Hall, R. A.,
hydraulic weighing scale, N '50, 7
- Harrison, E. S.,
modifications of dam checked by hydraulic
models, Ja '51, 7
- Health physics in radioisotope laboratories, N '50, 14
- Hearing and vision tests in employee selection, S '50,
20
- Helicopter rotor, effect of twist and taper of the
blades in vertical descent, S '50, 16
- High-frequency crystal-controlled oscillator circuits,
S '50, 18

EXPERIMENT STATION RESEARCH ENGINEER

Hildebrandt solvent extraction unit, Ja '51, 20, 23
 Honnell, M. A.,
 television today, S '50, 3
 Hoover, William Stough, Jr.,
 the effect of certain additives upon the physical
 properties of Portland cement, N '50, 18
 Hydraulic,
 analogy, applied to airfoils, S '50, 16
 _____ in compressible flow, S
 '50, 21
 _____ applied to problems of supersonic
 wind tunnel design, S '50, 22
 model check of dam modifications, Ja '51, 7
 research, S '50, 16
 weighing scale, N '50, 7

I

Industrial engineering, digests of graduate theses, My
 '50, 11
 Industrial management, digests of graduate theses, My
 '50, 11
 Industrialization of the South, trained manpower from
 Georgia Tech, Mr '51, 2
 Information service, technical, at Georgia Tech, N '50,
 21
 Institute of Nuclear Studies, N '50, 10
 Interviews, applied to employment problems, S '50, 24

J

Janus, Sidney Q.,
 psychological tools for business and industry,
 S '50, 19
 Jones, W. Dale,
 wage incentive payment for multiple-machine
 assignments, My '50, 11

K

Kennedy solvent extraction unit, Ja '51, 20, 22, 23
 Kethley, T. W.,
 life and death at low temperatures, Mr '51,
 5
 Kindsvater, C. E.,
 modifications of dam checked by hydraulic
 models, Ja '51, 7
 Kruger, Jerome,
 an azeotrope in the system bromine-carbon
 tetrachloride, Ja '51, 16

L

Lanthanum,
 relations of temperature, crystal structure and
 superconductivity, My '50, 12
 superconductivity, S '50, 11
 Lefevre and Tollens method of uronic acid analysis,
 applied to polyanhydrous acids, N '50, 18
 Library, Georgia Tech, N '50, 5
 collections, N '50, 6
 facilities, N '50, 6
 Life and death at low temperatures, Mr '51, 5
 Lift and drag forces on bodies of revolution, predic-
 tion, S '50, 22
 Lift coefficient, maximum for swept-back wings, S '50,
 16
 Little, Albert P.,
 solvent extraction of Georgia pine needles,
 N '50, 18
 Low temperatures, see also Very low temperature,
 effect on the survival of microorganisms,
 S '50, 14
 life and death at low temperatures, Mr '51,
 5

M

Manganese dioxide, electrochemical synthesis, for bat-
 teries, S '50, 11
 Masonry, reinforced brick, S '50, 16
 Mathematical research, S '50, 18
 Mechanical engineering research, S '50, 14
 Mechanical Sciences Division, S '50, 14
 Medical equipment, S '50, 16
 Meek, Richard Lee,
 rate studies in molecular distillation, N '50,
 18
 Mercury-gallium solubilities, Ja '51, 15
 Metallurgy,
 equipment, My '50, 4
 research at Georgia Tech, My '50, 3
 Microhardness tester, My '50, 4
 Micromeritics, see also Fine particles,
 settling rate of particles in aerosols, S '50,
 12
 surface properties of fine particles, S '50, 11
 Microorganisms, survival at low temperatures, S '50,
 14; Mr '51, 12
 Microwaves,
 dielectric and reflecting properties of sea wa-
 ter, S '50, 18
 propagation, S '50, 17
 Military
 research, S '50, 2
 Army reserve, My '50, 9
 Modulation, velocity, S '50, 18
 Molecular distillation, rate, N '50, 18
 Morris, John,
 the effect of oxidation on the 2,3-positions
 on the decarboxylation of certain polyanhy-
 drous acids, N '50, 18

N

Neodymium,
 relations of temperature, crystal structure and
 superconductivity, My '50, 12
 superconductivity, S '50, 11
 New, Noah Carroll,
 the aerodynamic equilibrium equations of the
 lifting rotor, S '50, 22
 Ninety-degree phase difference systems, S '50, 18
 Nitryl chloride, absorption spectrum, Ja '51, 15
 Nomographs, My '50, 8; S '50, 18

O

Oak Ridge Institute of Nuclear Studies, N '50, 10
 Oilseeds,
 extraction, S '50, 12
 solvent extraction, Ja '51, 5, 21
 Oscillator
 circuits, high-frequency, crystal-controlled,
 S '50, 18

P

Paints,
 exposure testing, N '50, 3; Mr '51, 7
 exterior, present development, Mr '51, 7
 studies of systems on southern yellow pine,
 S '50, 13
 Particle size distribution, determination by settling
 rate, S '50, 12
 Peanuts,
 cleaning, Ja '51, 3
 methods, Ja '51, 4
 electrostatic, Ja '51, 4
 mechanical, Ja '51, 17
 washing and drying, Ja
 '51, 4
 planting and harvesting machinery, S '50, 15
 sampling, cleaning, handling and shelling, S
 '50, 14
 solvent extraction, Ja '51, 5, 6, 21, 22, 23

GEORGIA INSTITUTE OF TECHNOLOGY

Phase difference systems, ninety-degree, S '50, 18
 Physics, digests of graduate theses, My '50, 12
 Physics Division, S '50, 17
 Pine needles, solvent extraction, N '50, 18
 Pine, southern yellow, painting, Mr '51, 16, 17
 Plastics, use as coating, N '50, 4
 Plourd, Webster William,
 — aviation clock characteristics in relation
 to speed and accuracy of reading, My '50, 13
 Polyanhydronic acids, decarboxylation, N '50, 18
 Portland cement, effect of certain additives on the
 physical properties, N '50, 18
 Power transmission, A-C network calculator, S '50, 18
 Praseodymium,
 — relations of temperature, crystal structure and
 superconductivity, My '50, 12
 — superconductivity, S '50, 11
 Propagation of electromagnetic waves, S '50, 17
 Psychological tests,
 — aptitude, S '50, 19
 — hearing, S '50, 20
 — limitations, S '50, 19
 — vision, S '50, 20
 Psychological tools for business and industry, S '50, 19
 Publications,
 — of the State Engineering Experiment Station,
 S '50, 10
 — research, My '50, 2

Q

Quantitative research, Mr '51, 2
 Quebracho, red, effect on the physical properties of
 cement, N '50, 18

R

Radar research, S '50, 17
 Radioactive wastes disposal, N '50, 14
 — concentration of radioactivity, N '50, 15
 — dust collection methods, N '50, 15
 — sewage system contamination, N '50, 15
 Radioisotopes, planning for a research program, N '50,
 9
 — cost, N '50, 11
 — equipment, N '50, 12
 — health physics, N '50, 14
 — laboratory, N '50, 11
 — literature available, N '50, 10
 — training necessary, N '50, 10
 — waste disposal, N '50, 14
 Rare earths, relations of temperature, crystal structure
 and superconductivity, My '50, 12
 Raudebaugh, R. J.,
 — metallurgical research at Georgia Tech, My
 '50, 3
 Reflecting and dielectric properties of sea water at
 microwave frequencies, S '50, 18
 Reid, George W.,
 — planning a small radioisotope program, N
 '50, 9
 Replica techniques in electron microscopy, Mr '51, 11
 Research,
 — aeronautical, S '50, 16
 — Army reserve program, My '50, 9
 — biochemical, S '50, 14
 — chemical, S '50, 11
 — civil engineering, S '50, 16
 — coatings, S '50, 13; N '50, 3
 — education's relation to, N '50, 2
 — electronics, S '50, 17
 — engineering schools' contributions, Ja '51, 2
 — food, S '50, 12
 — for Georgia, S '50, 9
 — future of, S '50, 2
 — government-financed, Ja '51, 2

hydraulics, S '50, 16
 — industrial and governmental, My '50, 2
 — mathematical, S '50, 18
 — mechanical engineering, S '50, 14
 — metallurgical, at Georgia Tech, My '50, 3
 — military, S '50, 2
 — need for facilities, N '50, 2
 — nonprofit, Mr '51, 24
 — publications, My '50, 2
 — quantitative, Mr '51, 2
 — radar, S '50, 17
 — television, S '50, 18
 — textile, S '50, 14
 — wood, S '50, 14
 Research Engineer, editor, Ja '51, 24
 Resins in paints and coatings, S '50, 14
 Rosselot, Gerald A.,
 — the State Engineering Experiment Station,
 1949-1950, S '50, 7
 Rotocel, see Blaw-Knox solvent extraction unit
 Rotor, lifting, aerodynamic equilibrium equations, S
 '50, 22
 Rowlock brick masonry, S '50, 16
 Rubber, use as coating, N '50, 4

S

Safety engineering, digests of graduate theses, My '50,
 13
 Scale, hydraulic weighing, S '50, 15; N '50, 7
 — mechanism, N '50, 8
 — operation, N '50, 23
 Seacord, Charles L., Jr.,
 — determination and classification of airplane
 transfer functions, S '50, 22
 Sea water, dielectric and reflecting properties at micro-
 wave frequencies, S '50, 18
 Sessions Brothers' solvent extraction unit, Ja '50, 21,
 22
 Settling rate measurement, S '50, 12
 Sewage,
 — and water analysis, S '50, 14
 — sulfate determination, S '50, 14
 — systems, effect of radioactivity on, N '50, 15
 Shadow casting techniques' in electron microscopy, Mr
 '51, 11
 Sherwin-Williams solvent extraction unit, Ja '51, 20,
 22, 23
 Slide rules, My '50, 5
 Sodium pyrophosphate, effect on the physical proper-
 ties of cement, N '50, 18
 Solubilities in gallium-mercury system, Ja '51, 15
 Solvent extraction, see also extraction,
 — oilseeds, Ja '51, 5
 — economic aspects, Ja '51, 23
 — forepressing, Ja '51, 6
 — future trends, Ja '51, 23
 — history, Ja '51, 5
 — meal and solvent separation, Ja
 '51, 21
 — oil and solvent separation, Ja '51,
 21
 — units, Ja '51, 19
 — pine needles, N '50, 18
 Soo, Shao-Lee,
 — a study of the effect of lubrication on the
 dynamics of spinning spindles, My '50, 13
 Soybeans, solvent extraction, Ja '51, 6, 18, 21, 23
 Spectrographic analysis, copper spark method, Ja '51,
 16
 Spectrum, nitryl chloride, Ja '51, 15
 Spillway, see Dam
 Spinning spindles, effect of lubrication on dynamics,
 My '50, 13
 State Engineering Experiment Station, see also Georgia
 Institute of Technology
 1949-1950, S '50, 7
 — Chemical Sciences Division, My '50, 24
 — purpose, N '50, 21

EXPERIMENT STATION RESEARCH ENGINEER

Technical Information Service, N '50, 21;
Ja '51, 24
Sulfate determination in water and sewage, S '50, 14
Supersonic wind tunnel design problems, S '50, 22
Surface properties of fine particles, S '50, 11

T

Technical Information Service,
at Georgia Tech, N '50, 21
head, Ja '51, 24
Television,
today, S '50, 3
color, S '50, 5
industrial application, S '50, 6
legal aspects, S '50, 4
technical aspects, S '50, 5
velocity modulation, S '50, 18
Textiles,
cotton-card fly, reclamation, S '50, 14
engineering, digests of graduate theses, My '50, 13
fabric analysis, S '50, 14
machinery, pickerstick check strap study, S '50, 14
research, S '50, 14
yarns, physical study, S '50, 14
Theses, digests of graduate,
aeronautical engineering, S '50, 21
chemical engineering, N '50, 17
chemistry, Ja '51, 15
industrial engineering, My '50, 11
industrial management, My '50, 11
physics, My '50, 12
safety engineering, My '50, 13
textile engineering, My '50, 13
Thioisophthalaldehyde condensation, Ja '51, 17
Thiophene, 2-acetyl, tertiary alcohol derivatives, Ja '51, 15
2-Thiophene carboxylic acid esters, preparation, Ja '51, 16
Thomas, Gerald B.,
application of water channel compressible gas analogies to problems of supersonic wind tunnel design, S '50, 22
Time and motion study, training, My '50, 11
Titanium, My '50, 14
copper system, My '50, 15
alloys, S '50, 12
Tollens and Lefevre method of uronic acid analysis, applied to polyanhydrouronic acid, N '50, 18
Toluene-carbon tetrachloride rectification, N '50, 17
Tooke, W. R., Jr.,
coatings research at Georgia Tech, N '50, 3
exposure testing—a guide for improvement of exterior paints, Mr '51, 7
Transfer functions, airplane, determination and classification, S '50, 22
Tung nuts, solvent extraction, Ja '51, 6, 23

U

Uronic acid analysis, Lefevre and Tollens method applied to polyanhydrouronic acid, N '50, 18

V

Van Leer, Blake R.,
education and research, N '50, 2
engineering schools' contribution to research, Ja '51, 2
future of research, S '50, 2
industrial and governmental research, My '50, 2
southern industrialization, trained manpower from Georgia Tech, Mr '51, 2

Varner, John Edward,
a critical study of the copper spark method of spectrographic analysis, Ja '51, 16
Varnishes, N '50, 4
a study of physical properties, S '50, 14
V. D. Anderson solvent extraction unit, see Anderson
Vegetable oils, extraction, S '50, 12
Velocity modulation, S '50, 18
Very low temperature research, S '50, 11
Vision and hearing tests, importance in employee selection, S '50, 20
Vitrification, Mr '51, 13

W

Wage incentive payment for multiple machine assignments, My '50, 11
Waste, radioactive, disposal, N '50, 14
Water and sewage analysis, S '50, 14
Water, channel,
used in tests of airfoils, S '50, 21
used in tests of wind tunnel shapes, S '50, 22
Weil, B. H.,
the Georgia Tech Library as a tool for science and industry, N '50, 5
Windows, testing, S '50, 15
Wind tunnel,
design, supersonic, problems, S '50, 22
studies, S '50, 16
Wings, swept-back, maximum lift coefficient, S '50, 16
Winthron, Stanley Oscar,
a study of the condensation of thioisophthalaldehyde, Ja '51, 17
Wood distillation, S '50, 14
Woodward, L. A.,
electron microscopy, Mr '51, 3

Y

Yarns, physical study, S '50, 14

EXPOSURE TESTING

Continued from Page 4

obtained under different sets of conditions, and the effects of these differences cannot be evaluated quantitatively with the data at hand. In most cases close liaison is necessary to establish good correlations between the work of different investigators.

Accelerated Tests

To complete this discussion mention should be made of accelerated testing techniques. For the most part, accelerated tests have not been found very reliable in predicting paint film performance under normal conditions. ^{13 14 15 16} As a rule, all of the physical and chemical changes which produce paint film failures are not accelerated at the same rate by these tests. Thus a film might be completely eroded in an ac-

celerated test before such failures as cracking or peeling can be observed. This limitation is characteristic of mechanical (carbon arc and water spray) weathering machines, and is also present to a lesser extent in other accelerated techniques such as 45° exterior exposures for house paints and exposures in south Florida.

It is claimed that south Florida exposures which usually enhance cracking and peeling can be well correlated with exposures in other locations. To do so requires use of an experimentally determined compensation factor for each type of film failure. These factors can be determined only by comparison of Florida exposures with normal exposures in the locality considered.

There is still a great need for a reliable accelerated weathering technique that could be used to predict film performance under any desired climatic conditions, and some work has already been done along this line. As exterior paints continue to improve in durability, the need for accelerated weathering tests becomes increasingly greater to permit evaluation within a reasonable time. It therefore seems inevitable that a reliable technique will be developed in the future.

BIBLIOGRAPHY

1. Van Loo, M., "Twenty-Five Years of Paint Testing," *Industrial and Engineering Chemistry* 41, 267 (1949).
2. Gardner, H. A. and Sward, G. G., *Physical and Chemical Examination of Paints, Varnishes, Lacquers and Colors*, Eleventh Edition, Henry A. Gardner Laboratory, Inc., Bethesda, Md., 1950.
3. Wilkins, L. and Weber, P., "Physical Studies of Paint Primers in Two-Coat Paint Systems Applied to Southern Yellow Pine," *Official Digest (Federation of Paint and Varnish Production Clubs)*, No. 265, 88 (1947); Georgia Tech Engineering Experiment Station Reprint No. 21.
4. Vannoy, W. G., "Modern Trends in House Paint Formulations," *Official Digest (Federation of Paint and Varnish Production Clubs)*, No. 235, 177 (1944).
5. Flaumenhaft, I. and Weitz, J., "Exterior Exposure Tests—A Review," *Official Digest (Federation of Paint and Varnish Production Clubs)*, No. 249, 361 (1945).
6. Vannoy, W. G., "House Paint Extenders," *Official Digest (Federation of Paint and Varnish Production Clubs)*, No. 251, 588 (1945).
7. Elm, A. C., "Paints as Moisture Barriers," *Official Digest (Federation of Paint and Varnish Production Clubs)*, No. 267, 197 (1947).
8. Dunn, A. C. and Baier, C. H., "Effects of White Pigments on the Physical Properties of Paint Films," *American Paint Journal* 32, No. 52, 42 (1948).
9. Werthan, S., *9 Years' Results of Exterior House Paint Test Program*, New Jersey Zinc Company, Palmertown, Pa., 1948.

10. Tooke, W. R., "Coatings Research at Georgia Tech," *The Research Engineer 1950-1951*, No. 3, 3 (1950).
11. Rowley, F. B. and LaJoy, M. H., *Some Causes of Paint Peeling*, University of Minnesota Engineering Experiment Station Bulletin No. 30, Minneapolis, 1949.
12. Browne, F. L., "Two-Coat System of House Painting," *Industrial and Engineering Chemistry* 33,900 (1941).
13. Hopkins, C. Y., "Modern Methods of Paint Testing," *Official Digest (Federation of Paint and Varnish Production Clubs)*, No. 213, 94 (1942).
14. Cleveland Paint and Varnish Production Club, "Weathering Machine Correlation in the Cleveland Club Area, Part I," *Official Digest (Federation of Paint and Varnish Production Clubs)*, No. 250, 454 (1945).
15. *Ibid.*, Part II, No. 262, 518 (1946).
16. Hollis, H., "The Performance Testing of Paint with Particular Reference to Tests Which Have a Bearing on Ultimate Outdoor Durability," *Journal of the Oil and Colour Chemists Association* 30, No. 329, 431 (1947).

QUANTITATIVE RESEARCH

Continued from Page 2

Speaking of his food preservation work at Georgia Tech, Kethley says that it "has been based on the theory that fundamental studies on processes and causes will yield information, which can be applied to practical considerations, and that such a long-range program will produce more practical and useful results in a shorter length of time than will short-term, so-called applied research." This statement admirably sums up the function of quantitative research.

Today there is a greater need than ever for quantitative facts, the basic building blocks to provide the foundations of a superior technology for defense and of an expanding economy in peace. Industry must concentrate upon fairly short-range applied research with the promise of quick results. But applied research draws upon long-range studies for fundamental data. Thus, the need for nonprofit institutions to perform quantitative research is as obvious as is the necessity for such research, itself. Fortunately, as a part of its unparalleled educational system, our nation possesses the type of quantitative research personnel and facilities required. Basic studies prosecuted in universities and their allied experiment stations combined with the applied research and productivity of American industry are our key to a secure and ever brighter future.

